APPENDIX L

APPENDIX L – BEST MANAGEMENT PRACTICES/STANDARD OPERATING PROCEDURES
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L.1 INTRODUCTION

This appendix presents a sampling of best management practices (BMPs), standard operating procedures (SOPs), and other measures for minimizing environmental effects of various authorized activities on public lands. The authorized officer is not limited to the following, nor is there any commitment to use this specific wording presented here. BMPs are dynamic, evolving through new understanding and developments in science and technology. They are selected and implemented as necessary, based on site-specific conditions, to meet resource objectives for specific management actions. New information and improving technologies will undoubtedly lead to the development of new or revised measures over time. New measures may be developed to address unforeseen impacts, as long as they comply with existing laws, polices, rights of the applicant, and this RMP.

L.2 AIR QUALITY

L.2.1 ROADS

- Vehicle speed limits may be applied to reduce fugitive dust emissions from road use.
- Watering, graveling, paving, or the application of surfactant may be used to reduce fugitive dust from road use.

L.2.2 OIL AND GAS PRODUCTION

Air Quality BMPs reduce emissions of hazardous air pollutants (HAPs), criteria pollutants (PM_{10}, $PM_{2.5}$, carbon monoxide, sulfur dioxide, ozone, nitrogen oxides), volatile organic compounds (VOCs), which contribute to ozone formation, and green house gases (GHGs). Combustion results in emissions of criteria pollutants, VOCs, GHGs, and HAPs, which come from vehicle tailpipe emissions, dehydrators, mobile and stationary engines, and flaring. Fugitive emissions of criteria pollutants, VOCs, GHGs, and HAPs are the result of equipment leaks, evaporation ponds and pits, condensate tanks, storage tanks, windblown dust (from vehicles and construction). Dehydrator vents result in emissions of GHG, VOCs, and HAPs.

- Projects and activities on BLM lands shall meet Federal, State, Regional Air Quality Control Boards, and other local emissions standards for air quality.
- Directionally drill multiple wells from a single pad, which results in minimizing roads, travel, dust, and vehicle emissions.
- Planned road systems result in less surface disturbance and save in construction and maintenance costs; fewer planned roads result in less area free of vegetation, which contributes to fugitive dust emissions.
- Apply water along roads, during trenching and earth-moving construction activities.
- Install vapor recovery units to reduce VOC emissions, which contribute to ozone formation.
- Reduce emissions from leaking gas on reciprocating compressor rod packing systems by replacing compressor packing rods at frequent intervals.

- Use solar power at tank setting or facility locations to reduce the number of vehicle trips and methane emissions from the use of pneumatic pumps.
- Replace high-bleed devices with low-bleed devices or retrofit bleed reduction kits on high-bleed devices. This reduces methane and VOCs from pneumatic devices (liquid level controllers, pressure regulators, and valve controllers).
- Use "green completions" to recover product, while reducing methane and VOC emissions that would otherwise result from venting or flaring during well completions.
- Vanpool to reduce the number of vehicles and associated combustion emissions.
- Use enclosed tanks instead of open pits to reduce fugitive VOC emissions.
- Use vapor recovery units on oil, condensate, and produced water storage tanks to reduce fugitive VOCs and recover BTU-rich vapors for sale or use on-site.
- Consider a BLM-approved dust suppressant to control fugitive dust emissions.
- Use cleaner diesel engine power (shift from Tier 1 to Tier 4) as manufacturers phase in newer engines between 2011 and 2014.
- To reduce NOx, SOx, CO, and CO_2, use controls for compressor engines, including closed loop engine control, controlled engines, selective catalytic reduction, system-installed power supply (solar or battery powered), and ultra-low sulfur diesel.
- Complete interim reclamation (post-drilling) and final reclamation of well sites and roadways during abandonment; recontour and revegetate unused or unnecessary areas to reduce fugitive dust emissions from bare or eroded soils and combustion emissions from vehicle travel.
- Reduce emissions that result from glycol over-circulation in glycol dehydrators by optimizing the circulation rate.
- Reduce GHG emissions (CH_4) by installing and using a flash tank separator to capture and recycle methane that flashes from rich glycol in an energy exchange pump.
- Reduce centrifugal wet seal compressor emissions from the seal oil degassing vent by replacing of wet seals with dry seals, which emit less methane and have lower power requirements.
- Install plunger lifts and smart automation systems, which monitor well production parameters to reduce methane emissions from well blowdowns.
- Reduce fugitive gas leaks by implementing a Directed Inspection and Maintenance program, which identifies and cost effectively fixes fugitive gas leaks using leak detection (infrared camera, organic vapor analyzer, soap solution, ultrasonic leak detectors) and measurement (calibrated bagging, rotameters, high volume samplers).

L.2.3 PRESCRIBED BURNING

Burn on permissive burn days and coordinate closely with applicable air pollution control district(s) to obtain necessary permits and authorizations prior to ignition.

Burn when weather conditions will provide good dispersion of emissions; utilize ignition techniques to encourage clean burns to reduce the amount of smoldering.

Utilize alternatives to burning, such as chipping or masticating, where applicable, to reduce smoke emissions.

Construct slash or brush piles using the following techniques to encourage a cleaner, hotter, and shorter burn that will minimize overall smoke production:

- Pile vegetation loosely to facilitate air movement between fuel pieces;
- Cover a portion of the pile to provide a dry ignition point following rain events;
- Minimize the amount of dirt in the pile;
- Ensure fuels are sufficiently dried; and
- Use proper lighting techniques when igniting the pile to encourage a clean burn.

Where possible, split larger burn units into several smaller blocks to have more control over the amount of area burned in one operational period to better control smoke production on marginal burn days.

L.2.4 Additional Information on BMPs for Air Quality

- BLM Washington Office BMP Web site: http://www.blm.gov/bmp
- EPA Natural Gas STAR Program: http://www.epa.gov/gasstar/tools/recommended.html
- California Air Resources Board Clearinghouse: http://www.arb.ca.gov/cc/non-co2-clearinghouse/non-co2-clearinghouse.htm
- Four Corners Air Quality Group: http://www.nmev.state.nm.us.aqb/4C/
- Intermountain BMP Web Site/Database: http://www.oilandgasbmps.org
- Fugitive Dust Control: http://www.arb.ca.gov/cap/handbooks/fugitivedust_large.pdf
- Forest Management Burning Handbook: http://www.arb.ca.gov/cap/handbooks/forestmngtburnlg.pdf
- Oil Field Production Handbook: http://www.arb.ca.gov/cap/handbooks/oilfieldproductionlarge.pdf
- Naturally Occurring Asbestos Control: http://www.arb.ca.gov/cap/handbooks/asbestosnoafinal.pdf

L.3 Biological Resources

The following measures are SOPs typically applied to BLM undertakings or authorizations that are implemented to avoid or minimize impacts on biological resources. Some of these procedures are identified to ensure compliance with BLM authorization terms and conditions. Many of these measures have been implemented across the BLM as BMPs or have been developed as mitigation measures resulting from site-specific environmental analyses. Mitigation measures often become

design features in subsequent proposed actions to avoid impacts and to implement environmentally compatible projects, and thus they become SOPs.

Many measures to protect threatened and endangered and sensitive species have been developed as a result of formal consultations between the BLM and USFWS on a variety of BLM actions. The CDFG also has required many measures for projects complying with CESA, CEQA, and the Fully Protected Species Act. Once protection measures are identified in federal biological opinions or in CDFG permits, they generally become SOPs to obtain subsequent USFWS and CDFG permits. As additional measures are developed to minimize the adverse effects from future management activities, they are likely to become required actions in order to comply with ESA and CESA and thus would become additional SOPs.

L.3.1 GENERAL

- No construction or surface disturbing activities shall occur without prior written authorization of the authorized BLM officer.
- Surface disturbance will be minimized. Project applicants will be encouraged to utilize previously disturbed sites when feasible.
- Authorizations for new surface-disturbing activities will place priority on avoiding impacts to biological, cultural, and paleontological resources. Avoidance will employ measures such as relocation of project sites, modifying construction techniques, and altering project timing.
- Civil engineering studies or geotechnical studies may be required to determine feasibility prior to road or other construction. Construction in areas of extremely unstable bedrock formations and active landslides will not be permitted or would require special design criteria.
- Delineate work area boundaries with flagging, temporary fencing, or other marking to minimize surface disturbance or impacts on sensitive biological, cultural, or other important resources.
- When necessary to protect sensitive biological, cultural, or other important resources, monitoring by BLM approved biologists and archaeologists shall be required during construction activities.

L.3.2 REHABILITATION/ RESTORATION

- Disturbed sites will be restored to natural conditions using site-appropriate measures and timelines developed in consultation/coordination with BLM biologists. Restoration plans and requirements will be developed on a case-by-case basis and include post-project monitoring.
- All unnecessary roads, vehicle paths, and other disturbed areas will be restored to natural conditions.
- Match local genotypes, as close as practical, when choosing seeds and other materials for habitat restoration.

- Adjust grazing prescriptions or eliminate grazing following restoration if necessary to protect populations of vulnerable species and facilitate establishment of newly planted sites.

L.3.3 BIOLOGICAL RESOURCE PROTECTION

- No destruction, cutting, or clearing of trees or other vegetation shall occur without prior written approval from the authorized BLM officer. Firewood cutting will not be permitted on Bakersfield Field Office lands. Small amounts of dead and down wood, less than four inches in diameter, may be collected for on-site campfires, except where restricted. Down and dead wood greater than four inches in diameter and standing dead trees may not be collected for campfire use.
- Biological surveys will be required prior to any disturbance, unless given project- specific, written clearance from BLM officers.
- Surveys will be conducted at the appropriate time of year to detect sensitive species and important biological resources.
- Surveys will comply with current BLM, USFWS, and CDFG protocols.
- If it has been longer than 30 days between the last biological survey and the proposed start of construction, BLM biologists may require additional surveys for sensitive species.
- All biological survey data and reports will be sent from the biologist conducting the survey directly to the BLM biology staff. All survey biologists are required to have an updated CV on file in the Bakersfield Field Office. Prior to undertaking a survey, BLM will certify that survey biologists have appropriate training, experience, and permits.
- Exploration, construction, and development activities may have seasonal restrictions imposed within a half- mile radius around raptor nest sites. Seasonal restrictions would allow for undisturbed courtship, nest building, incubation and fledging. This seasonal restriction could last as long as six months, depending upon species. Restrictions could be imposed around high-use areas during other seasons.
- Facilities and structures such as power lines, wind towers and turbines, solar arrays, and communication facilities will conform to BLM-, USFWS- and CDFG-approved wildlife protection guidelines. Such guidelines include, flight diverters, night ambient lighting, tower beacon lights, wind tower design and voidance measures, raptor protections for power poles, perimeter fencing, and vegetation management.
- Trenches and holes shall be provided with animal escape ramps and not be open longer than one week.
- Pipe ends three inches or greater will be covered.
- Power lines will be constructed to meet raptor protection protocols. Existing power lines will be modified to meet raptor protection protocols where electrocutions occur.
- All troughs shall have an escape ramp. Ensure that troughs allow wildlife access to water and that they are in good repair and function properly.
- Claim stakes made of pipe shall be two inches or less in diameter.

- Avoid soil-disturbing activities during periods of runoff or when soils are wet and muddy, in order to minimize damage.

L.3.4 WETLAND-RIPARIAN HABITATS

- Wetlands and riparian areas affected by livestock would be fenced or otherwise protected. Water diversions would divert the minimum volume necessary to maintain livestock or wildlife surface water. Float valves or other devices would be installed to control diversion. To protect riparian areas, water withdrawn for livestock would be piped as far as necessary or would be reconsidered on a case-by-case basis.
- New development within a quarter-mile of springs, guzzlers, or riparian areas would be avoided whenever possible. This restriction is intended to minimize wildlife disturbance at key water locations and to limit impacts on sensitive watersheds. Activities that could be allowable in these areas are spring developments, water pipelines, fences, and project maintenance and repair. Power lines, roads, and other linear developments could be allowed, with suitable mitigation, to cross riparian areas where there are no viable alternatives.
- Livestock water sources would be made available for wildlife yearround, as needed and to the greatest extent practicable.
- Stream crossings, if necessary, would be designed to minimize adverse impacts to soils, water quality, and riparian vegetation and provide for fish passage as appropriate.
- As appropriate, roads and trails adjacent to streams or riparian areas that impact water quality may be redesigned, repaired, maintained, or re-located to a location not impacting the water quality.

L.3.5 THREATENED AND ENDANGERED, AND SENSITIVE SPECIES

Special status species survey, avoidance, take minimization, mitigation measures, compensation, and monitoring measures required in biological opinions (programmatic and site-specific) will be incorporated into project design, attached as conditions of approval, grant, or lease terms and conditions, or otherwise implemented in all BLM projects and authorizations that may affect listed species. These measures may change due to new information or USFWS and CDFG requirements. Current practices are found below.

General Guidelines for Conserving Habitat and Minimizing Project Impacts

- Habitat disturbance will be minimized and conducted in a manner that reduces, as much as possible, the potential for take of individuals of a listed species. Existing roads and routes of travel will be used, to the greatest extent practicable. Natural drainage patterns will be maintained to the greatest extent practicable.
- Avoid large draws and drainages with saltbush to the greatest extent practicable.

- The area of disturbance will be reduced to the smallest practical area, considering topography, placement of facilities, location of burrows, nesting sites or dens, public health and safety, and other limiting factors.
- Work area boundaries will be delineated with flagging, temporary fencing or other marking to minimize surface disturbance associated with vehicle straying.
- To the extent practicable, use previously disturbed areas to stockpile excavated materials, store equipment, dig slurry and borrow pits, locate trailers, park vehicles, and performing other surface-disturbing actions.
- All oil spills will be contained closest to the source site as possible. The USFWS will be notified within 48 hours of any oil spill.
- Project employees will be directed to exercise caution when commuting within listed species habitats. The speed limit on unpaved roads not maintained by the county shall be a maximum of 20 MPH, in order to minimize wildlife casualties.
- Cross-country travel by vehicles is prohibited, unless specifically authorized by BLM for the project. The use of all terrain vehicles (ATVs) may be considered for projects that require cross-country travel (such as project survey staking, geophone placement and retrieval).
- Project employees will be provided with written guidance governing vehicle use restrictions, speed limits on unpaved roads, and fire prevention and hazards.
- A worker education program will be conducted for all employees working on the project sites in listed species habitats. The education program will include identification of listed species and their habitats, project mitigation measures and stipulations, reporting requirements, and penalties for failure of compliance.
- All spills of hazardous materials within endangered species habitats shall be cleaned up immediately.
- Unless specified for reducing impacts to blunt-nosed leopard lizards, actions during evening hours when some listed species are active and vulnerable to vehicle or equipment-induced injury or mortality will be minimized.
- Trash and food items will be contained in closed containers and removed daily.
- Firearms will be prohibited from project sites.
- Trenches or holes should have at least one escape ramp for each 1,000 feet of open trench. Escape ramps should be earthen and at a slope no steeper than 1:1. Trenches will be checked in the morning before beginning work and at the end of the work day. Any entrapped animals will be allowed to escape unharmed.
- Pets will not be permitted on construction project sites.
- Listed species shall be protected from the hazards posed by oil sumps. All hazardous exposed oil sumps shall be screened or eliminated (California Laws for Conservation of Oil and Gas 1995). All screening of sumps shall meet the following specifications: (1) be not greater than 2 inch nominal mesh, (2) be of sufficient strength to restrain entry of wildlife, and (3) be supported in such a manner so as to prevent contact with the sump fluid. Oil sumps shall be designed, constructed, and maintained as to not be a hazard to people,

livestock, or wildlife, including birdlife. Oil sumps shall be filled with earth after removal of harmful materials (California Code of Regulations 1982).

- Biologists and law enforcement personnel from the California Department of Fish and Game and the Service shall be given complete access to the project area to review monitoring and mitigation activities.
- Project activities that are likely to cause the amount or extent of take to be exceeded shall cease immediately.
- The protective measures being implemented for listed species shall be extended to candidate and proposed species in the project area to the maximum extent practicable.
- Restoration will be required on unused portions of the project area, or oil and gas lease when deemed necessary by the BLM to maintain or improve habitat values. Restoration will be required when a project or lease is abandoned. The BLM will be contacted for specific restoration requirements upon project completion.

Disturbance Levels

- Surface disturbance on BLM lands in Reserves (Red Zones) will not exceed 10% of any 640-acre section, aliquot section, or aggregate of adjacent aliquot sections.
- Surface disturbance on BLM lands in Corridors (Green Zones) will not exceed 25% of any 640-acre section, aliquot section, or aggregate of adjacent aliquot sections.

Survey Requirements

- Threatened and Endangered Reserves and Corridors will be presumed to be occupied habitat for listed animal species. Wildlife surveys will determine listed species presence and/or important habitat features for listed species. Surveys will be conducted within 30 days prior to the onset of ground breaking actions and will include daytime line transect surveys which will be conducted by walking the project area and appropriate buffer at 30 to 90 feet intervals. Transect width will be adjusted based on vegetation height, topography, etc. Surveys will include areas of surface disturbance, appropriate buffers, access routes, and cross-country travel routes. Surveys will be designed to identify habitat features such as burrows, dens, and precincts, and not species presence or absence.
- If non-BLM lands are also involved in a project, an applicant may choose to comply with some other USFWS- and CDFG-approved program (such as the Metro Bakersfield HCP or the proposed Kern County Valley Floor HCP). If an alternative program were selected, the survey requirements for the alternative program may be substituted at the USFWS's and BLM's discretion.

San Joaquin Kit Fox

Survey for natal, known, occupied, and potential dens in the project area and a 200-foot buffer.

Blunt-Nosed Leopard Lizard

Survey for burrows that may be used by blunt-nosed leopard lizards in the area to be disturbed by the project and a 50-foot buffer.

Giant Kangaroo Rat

Survey for precincts in the area to be disturbed by the project and a 50-foot buffer.

Tipton Kangaroo Rat

Survey for burrows in the area to be disturbed by the project and a 50-foot buffer.

Federal Proposed and Federal Candidate and State Listed Animal Species

Survey for important habitat features in the area to be disturbed by the project and a 50-foot buffer.

Kern Mallow, California Jewelflower, and San Joaquin Woolly-Threads

Survey during the appropriate season in the area to be disturbed by the project and a 50-foot buffer. Conduct reconnaissance-level surveys to determine habitat suitability using meandering walk-over surveys. Conduct site-specific surveys in appropriate habitat by walking transacts with 50-foot spacing.

At the discretion of an approved BLM botanist, existing information may be used to conclude that the site is not occupied and surveys are not required or that project impacts are acceptable without detailed surveys.

Hoover's Woolly-Star

Survey for species in the area to be disturbed by the project and a 50-foot buffer, if season is appropriate. If season is inappropriate to detect species or skeletons, use surveys to evaluate potential of a site to support the species. Reconnaissance level surveys to determine habitat suitability will be conducted using meandering walk-over surveys. Site-specific surveys in appropriate habitat will be conducted by walking transects at 50-foot intervals.

At the discretion of an approved BLM botanist, existing information may be used to conclude that the site is not occupied and surveys are not required or that project impacts are acceptable without detailed surveys.

Bakersfield Cactus

Bakersfield cactus is known to occur on one section of split estate land within the Green Zone. Bakersfield cactus is not known to occur elsewhere in either the Red or Green Zone. Survey project sites in potential habitat using meandering walk-over surveys.

State-Listed and Federally Proposed and Candidate Plant Species

Survey in the area to be disturbed by the project and a 50-foot buffer, if season is appropriate. If extant populations or high potential habitat is known to occur in the project area, the BLM may require surveys during the appropriate season. At the USFWS/BLM's discretion, existing information may be used to conclude that the site is not occupied and surveys are not required.

Measures for Minimizing Take

San Joaquin Kit Fox

San Joaquin kit fox dens will be protected, to the maximum extent practicable. Known, occupied, and potential nonnatal dens will be buffered by 100 feet. Unoccupied natal dens will be buffered by 200 feet to protect the physical den site. If an active natal den is encountered, the USFWS will be contacted immediately, before any action is taken.

The project construction area will be delineated with a temporary fence, flagging, or other barrier. Actions within the buffer zone shall be limited to vehicle and equipment operation on existing roads.

Non-fatal disturbance, such as above ground blasting, vibroseis, and shothole, shall not occur within 500 feet of an active San Joaquin kit fox natal den between November 1 and August 15 to reduce disruption of kit fox breeding.

Potential dens will be monitored and temporarily blocked. Den monitoring will follow the guidelines described below. In the event that a den is encountered that needs to be excavated, the following will apply:

Non-natal dens within a construction area may be carefully excavated at any time of the year by Service-approved biologists or under the supervision of a Service-approved biologist. Prior to the destruction of the den, the den will be monitored for at least three consecutive days to determine its current status. Activity at the den will be monitored by placing tracking medium at the entrance and by spotlighting. If no kit fox activity is observed during this period, the den will be destroyed immediately to preclude subsequent use. If kit fox activity is observed at the den during this period, the den will be monitored for at least five consecutive days from the time of observation to allow any resident animal to move to another den during its normal activities. Use of the den can be discouraged during this period by partially plugging the entrance(s) with soil in such a manner that any resident animal can escape easily. Destruction of the den may begin when, in the judgment of the Service-approved biologist, the animal has moved to a different den. If the animal is still present after five or more consecutive days of plugging and monitoring, the project biologist shall contact the BLM or the Service to obtain permission to excavate the den when it is temporarily vacant, for example, during the animal's normal foraging activities.

Destruction of the den will be accomplished by careful excavation until it is certain that no kit foxes are inside. The den will be fully excavated and then filled with dirt and compacted to ensure that kit

foxes cannot reenter or use the den during the construction period. If, at any point during excavation a kit fox is discovered inside the den, the excavation activity will cease immediately and monitoring of the den will be resumed. The BLM and the Service will be notified immediately. Destruction of the den may be resumed, when in the judgment of the Service-approved biologist, the animal has escaped from the partially destroyed den.

If an unoccupied natal den cannot be avoided, the den will be carefully excavated by a Service-approved biologist with permission from the Service or the BLM. Excavation of unoccupied natal dens will be allowed only between August 15 and November 1.

Pipes and culverts will be searched for kit fox prior to being moved or sealed, to ensure that kit foxes are not being entrapped. Any kit fox found will be allowed to escape unimpeded. Pipes and culverts with a diameter greater than 4 inches will be capped or taped closed after searching them.

Occupied pipe dens will be protected to the maximum extent practicable. Pipe dens will be buffered to protect the physical den site and kit fox activity. Removal of pipe dens will follow the monitoring and plugging procedure described above for natural dens.

Blunt-Nosed Leopard Lizard

If a blunt-nosed leopard lizard is observed in the project area or along the access route BLM will be immediately contacted. BLM will provide additional measures that must be complied with to avoid impacts to blunt-nosed leopard lizards.

Avoid burrows that may be used by blunt-nosed leopard lizards, to the greatest extent practicable.

The biological monitor shall check the project area and access route daily during the blunt-nosed leopard lizard active season to determine the presence or absence of lizards in the work area. If blunt-nosed leopard lizards are observed in the project area or along the access route BLM will be immediately contacted. BLM will provide additional measures that must be complied with to avoid impacts to blunt-nosed leopard lizards. As part of the post-construction report, a map showing the location, date and time of the observation will be submitted.

If blunt-nosed leopard lizards are known or likely to occur in the general project area:

Avoid burrows that may be used by blunt-nosed leopard lizards.

Locations of activities with potential to collapse or block burrows (sleeper placement, stockpile, storage and parking areas, trenching) will be approved by the biological monitor.

The biological monitor may allow certain activities in burrow areas if, in his or her judgment, the combination of soil hardness and activity impact is not expected to collapse burrows. Activities authorized by the biological monitor in burrow areas will be documented and included in any report.

Roadway sections where blunt-nosed leopard lizards have been observed or are likely to occur should be clearly marked to prevent workers from driving off the road and over burrows. Barriers, such as fencing, may also be installed.

A brief description of measures taken to avoid burrow collapse will be included in any report, including the post-construction report.

In addition, for project activities that occur during the blunt-nosed leopard lizard active season (approximately April 15 to October 15) the following will apply:

- Notify the BLM that blunt-nosed leopard lizard active season measures are being implemented;
- When possible, conduct project activities at night or during blunt-nosed leopard lizard inactivity periods (generally when temperatures are below 77 degrees F and above 99 degrees F);
- All personnel will be advised to reduce speeds on sections of the access/egress route with potential to support blunt-nosed leopard lizards.
- All vehicle operators will check under vehicles and equipment prior to operation.
- Any trenches or pits will be inspected by the biological monitor in the morning, late afternoon, at the end of the work day and prior to backfilling to free any blunt-nosed leopard lizards that may become entrapped. Trenches or holes should have at least one escape ramp for each 1,000 feet of open trench. Escape ramps should be earthen and at a slope no steeper than 1:1.

A flashing barrier may be installed around the work area to prevent blunt-nosed leopard lizards from entering the work area. The flashing barrier will be constructed of 18-inch or wider flashing, buried 6-inches in depth and reinforced with rebar or fence posts. Silt fencing will be used to isolate areas inside the exclusion fence. If a blunt-nosed leopard lizard is subsequently found within the fenced area, the fence will be removed (in that area) and the lizard will be allowed to leave the exclusion zone. Surveys will continue until blunt-nosed leopard lizards are no longer observed inside the flashing barrier (i.e. no evidence for one to two weeks dependent upon the discretion of the biologist). Barrier installation should occur prior to emergence of blunt-nosed leopard lizards or by April 15. Locate flashing so that no burrows are destroyed and avoid burrows during barrier construction. Surveys will occur when temperatures are sufficient for leopard lizards to be above ground. The flashing barrier will remain in place until drilling and sump closure activities have been completed.

Burrows that cannot be avoided may be destroyed under the following circumstances:

- Burrows inside a barrier may be destroyed after the survey and monitoring requirements described above for flashing barriers has been met. Burrows should be carefully excavated under the supervision of a qualified biologist to verify that is it unoccupied and then destroyed.

- If any burrows are destroyed, the following information will be included in the post construction compliance report: the dimensions of the of the area impacted by burrow destruction/excavation; number of burrows destroyed/excavated; results of burrow excavation, including any observations of wildlife in excavated burrows; and any other information deemed useful by the consulting biologist.
- If a blunt-nosed leopard lizard were observed exiting a burrow, the burrow should be carefully excavated, under the supervision of a qualified biologist to verify that is it unoccupied and immediately destroyed.

The biological monitor shall check the project area and access route daily during the blunt-nosed leopard lizard active season to determine the presence or absence of lizards in the work area. If blunt-nosed leopard lizards are observed in the project area or along the access route, the biological monitor will take action to avoid impacts on lizards.

If a blunt-nosed leopard lizard is observed at the project site or along the access/egress route, the biological monitor will notify the BLM of the actions being undertaken. Initial notification may be by phone message. Written documentation, including GPS coordinates of lizard observations, will be included in any reports. The post-construction report will include a map showing the location, date, and time of any blunt-nosed leopard lizard observations.

Roadway sections where blunt-nosed leopard lizards have been observed should be clearly marked to prevent workers from driving off the road into blunt-nosed leopard lizard habitat or over burrows. Barriers, such as fencing, may also be installed.

The biological monitor must be on-site during appropriate temperatures for blunt-nosed leopard lizard activity. The biological monitor will escort all traffic through any area where blunt-nosed leopard lizards have been observed. Biological monitors will complete daily compliance reports, which will be summarized and included in the weekly report sent to the BLM.

Large vehicles (tankers, water trucks, drilling rigs) must be escorted to and from the worksite by a biological monitor during appropriate temperatures for blunt-nosed leopard lizard activity.

The biological monitor will provide the BLM with a brief weekly report describing any actions taken to avoid blunt-nosed leopard lizard impacts. This report may be submitted by e-mail to the BLM.

All reports must be submitted by the biological monitor conducting the work in the field or be reviewed by the field biological monitor. Alternately, the original report prepared by the field biological monitor may be attached to the report.

When the biological monitor determines that temperature patterns at the project site no longer support blunt-nosed leopard lizard activity for the season and with receipt of the BLM's concurrence, these active season measures may be discontinued.

If blunt-nosed leopard lizards have been observed in the project area or along the access route, and operations and maintenance will continue into the next blunt-nosed leopard lizard active season, an operations and maintenance plan (O&M Plan) will be submitted to BLM. The O&M Plan will outline the practices and mitigation measures that will be implemented to avoid impacts on blunt-nosed leopard lizards.

Giant Kangaroo Rat and Tipton Kangaroo Rat

Avoid active precincts by a buffer of 50 feet. Actions within the buffer zone will be limited to vehicle and equipment operation on existing roads. Actions within buffer zones will be confined to daylight hours.

Annually, the USFWS will advise the BLM if applicants should be required to implement the following capture and release program:

- If active precincts cannot be avoided, the area will be trapped no greater than seven days before ground-disturbing activities for five consecutive nights. On the day following the fifth trap night, burrows will be carefully excavated. Captured animals will be marked and may be released into enclosed artificial burrow systems outside the work area the following night. All work will be supervised by a USFWS-qualified biologist. At anytime during the year, the USFWS and the BLM may adjust or decide to discontinue the capture and release program.

Kern Mallow, California Jewelflower, San Joaquin Woolly-Threads, and Hoover's Woolly-Star

Extant populations will be avoided, to the greatest extent practicable. The locations of listed plants will be avoided and temporarily fenced or prominently flagged to prevent inadvertent encroachment by vehicles and equipment during the activity. No extant natural populations of California jewelflower are known from Kern or Kings Counties. If California jewelflower populations and individuals are discovered in these counties, they will be avoided by a 50-foot buffer.

If extant populations of Kern mallow, San Joaquin woolly-threads or Hoover's woolly-star cannot be avoided, surface disturbance should be scheduled after seed set and before germination. Collection of seed, with reseeding undertaken at the site following the activity, during seasonal time-frames and weather conditions favorable for germination and growth, may also be required. Topsoil may be stockpiled and replaced after project completion. Topsoil will not be required to be stockpiled for greater than one year.

Impacts on extant populations may be considered minimized when (a) the number of plants lost is cumulatively less than 3 percent of the impacted population and disturbance is temporary, or (b) the amount of habitat lost is less than 3 percent of the occupied habitat for the impacted population.

Plants that are considered waifs or incidental, biologically marginal occurrences due to their presence on chronically disturbed habitat and a small population size (less than 50 individuals) may be disturbed at the USFWS/BLM's discretion.

The following guidelines shall be used to determine thresholds for facilities operation and maintenance activities that are within the scope of certain programmatic biological opinions:

- Estimated loss of individuals of plants from project activities will amount to no more than 3 percent of the individuals of the impacted population;
- Estimated extent of habitat disturbance amounts to no more than 3 percent of the estimated acreage of occupied habitat for the impacted population;
- Formal consultation shall be reinitiated if chronic and cumulative habitat loss and disturbance adversely affects a population that does not qualify as a waif or an incidental, biologically marginal occurrence by virtue of its presence on chronically disturbed habitat or small population size (less than 50 individuals);
- Herbicide use will not be permitted within 300 feet of listed plant populations identified during pre-project surveys.

Kern Mallow

The BLM and the USFWS may delineate a Kern Mallow Specialty Preserve, where special measures to conserve Kern mallow will be required. Delineation will include mapping the current distribution of Kern mallow, particularly the outer boundaries of core and satellite populations. Special measures may include:

- Completely avoiding areas occupied by Kern mallow;
- Conducting all surface-disturbing work after seed set and before germination, regardless of the presence or absence of Kern mallow;
- Compensating impacts with lands inside the specialty preserve;
- Stockpiling topsoil and replacing after project completion; and
- Using modified compensation ratios.

Bakersfield Cactus

Bakersfield cactus is currently known to occur on one section of split-estate land within a Corridor (Green Zone). Bakersfield cactus is not known to occur elsewhere in this zone. If Bakersfield cactus populations or individuals are discovered, they will be avoided by a 50-foot buffer in all areas where they are located.

San Joaquin Antelope Squirrel

To the maximum extent practicable, the measures described above for blunt-nosed leopard lizards will be applied to San Joaquin antelope squirrel in the project area and along the access/egress route.

In areas where antelope squirrels are suspected to occur and when temperatures are suitable for antelope squirrel activity, all personnel will be advised to check below parked vehicles and equipment before moving such vehicles or equipment. Caution will be taken when driving through areas where antelope squirrels may occur.

The applicant should implement CDFG-approved San Joaquin antelope squirrel take avoidance measures to minimize or eliminate the likelihood "take" of San Joaquin antelope squirrel and provide compliance with the California Endangered Species Act.

Project Monitoring

Each project will have a field contact representative (FCR), who will be responsible for overseeing compliance with protective stipulations for listed species. The FCR may be a project manager, project representative, BLM employee, or contract biologist. The FCR will have the authority to halt all actions that are in violation of the stipulations. The FCR will have a copy of all appropriate stipulations when surface-disturbing actions are being conducted on the site. The BLM and USFWS will be notified of the name and telephone number of the FCR prior to project construction.

Biological monitoring will be accomplished by a USFWS-qualified biologist. The biologist will be responsible for field crews to be in compliance with protection measures, performing surveys in front of crews as needed to locate and avoid sensitive species and habitat features, and monitoring project mitigation compliance. The biological monitor will have the authority to halt all non-emergency actions should danger to a listed species arise. Work will proceed only after hazards to the listed species are removed, the individual(s) is no longer at risk, or the individual(s) has been removed by the biologist.

The BLM will be provided with the name, phone number, and e-mail of the field biological monitor prior to construction. If not already on file at the BKFO, a copy of the field biological monitor's resume or curriculum vitae will be submitted to the BLM prior to the commencement of construction.

Biological monitors will be required to be on-site during initial surface-disturbing actions to minimize direct take of listed species. Subsequent to initial surface disturbing activities, biological monitors are not required to be present but must be available within 24 hours notice from the applicant, the BLM, or the USFWS in order to troubleshoot potential take situations.

Biological monitors will be required to be on-site during placement of sleepers and pipe to minimize direct take of listed species.

At the BLM's/USFWS's discretion, on-site biological monitors may not be required if exclusion zones or surface disturbance areas are prominently marked with lath, flagging, or fencing, as necessary.

Biological monitors are required for kit fox den excavations.

In previously unsurveyed areas, biological monitors are required for routing cross-country travel to minimize impacts on habitat features.

Biological monitors may be required, if, on project inspection by the BLM, CDFG, or USFWS, noncompliance of project stipulations are observed and documented.

All reports must:

- Be signed and submitted by the biological monitor conducting work in the field, OR
- Be reviewed and signed by the biological monitor conducting work in the field, OR
- Include, as an attachment, the original report prepared and signed by the field biological monitor.

An e-mail report originating from the field biological monitor may be accepted as a signature.

Within 60 days of completion of construction, a brief post-construction compliance report will be provided to the BLM that addresses:

- Any revisions to habitat disturbance estimates;
- Any observed impacts on listed species, including take;
- A brief description of significant actions taken to comply with the provisions listed above;
- An overall evaluation of compliance with the provisions and any suggestions for changes to the provisions;
- Any information required due to the sighting of an additional species, such as a blunt-nosed leopard lizard.

Compensation

The compensation ratio for Kern mallow will be 9:1 for permanent impacts and 6:1 for temporary impacts on known populations. For all other species, the compensation ratio will be 3:1 for permanent impacts and 1.1:1 for temporary impacts on previously disturbed habitat.

If a new compensation ratio becomes established for a county or species, the BLM and USFWS may decide to modify compensation ratios.

For protected lands (such as federal lands, state wildlife areas, conservation banks, Lokern area) a replacement component will be added to the compensation ratio.

Compensation of habitat must be in kind. Land used for compensation must be of equal value or better than the land impacted. The same species must be present and habitat must be of an equal of greater value. Lands used for compensation for project impacts on Kern mallow, San Joaquin woolly-threads, blunt-nosed leopard lizards, and the kangaroo rats must support these species or be approved by the USFWS for these species. Lands used to compensate for impacts on a kit fox natal den must support breeding populations of kit foxes.

Ownership of compensation lands will be transferred prior to any surface disturbance to one of the following: the BLM; an entity acceptable to the BLM, USFWS, and CDFG that can effectively manage listed species and their habitats; the CDFG; or the USFWS for dedication to listed species habitat management. The USFWS will be informed before the actual transfer when land is transferred.

Areas preapproved to serve as compensation areas are the Lokern Road area, Buena Vista Valley, Semitropic Ridge, Allensworth, Kettleman Hills, Kern Water Bank, Carrizo Plain Natural area, or any Specialty Preserve agreed to by the BLM and the USFWS. Habitat linkage areas and small specialty preserves determined by the BLM, CDFG, and USFWS to be important for species conservation and recovery will be acceptable as compensation habitat. Coles Levee Ecosystem Reserve has historically served as a compensation area. The USFWS is monitoring the long-term viability of the bank and may choose to curtail approval of this area as a compensation area.

As an alternative to the above standard compensation method, applicants may provide a letter agreeing to dedicate existing mitigation credits or purchase additional mitigation credits at a USFWS-approved mitigation bank to compensate for any impacts.

The final compensation acreage will be adjusted on completion of construction, based on the actual amount of acreage temporarily and permanently disturbed.

The applicant may propose to conduct construction in a manner that results in no surface disturbance. The biological monitor will document surface conditions before and after construction to verify the lack of disturbance. The biological monitor will take before and after photographs of the construction corridor every 1,000 feet or as necessary to document the lack of disturbance. The same photo point locations and directions will be used for the before and after photos. GPS coordinates for each photo point will be provided to the BLM.

The USFWS and California Department of Fish and Game protocols will be employed to conduct special status species surveys.

Control of Non-native Species

Projects and activities on BLM lands will include measures to minimize the introduction and spread of weeds.

Weed control methods will follow integrated pest management principles.

Use of pesticides shall comply with applicable federal and state laws. BLM policy requires project-specific NEPA analysis and the issuance of a pesticide use permit before the use of pesticides. Only products on the California BLM's list of approved pesticides may be used.

The release of nonnative animal species will be prohibited, other than those legally introduced for biological control, or those released during legal hunts as regulated by CDFG.

Vehicles

Vehicles will remain on existing legal roads unless given specific written approval by the authorized BLM officer. Off-road travel will be discouraged.

In appropriate sites, constraints will be placed on vehicle speeds to reduce potential for roadkill, to minimize dust, and to protect sensitive animals and habitats.

L.4 SOILS

- Minimize soil disturbance by limiting developments to the smallest area possible and by using previously disturbed areas and existing roads to the extent practicable.
- Minimize surface disturbance on steep slopes, which are more prone to erosion.
- Restrict access and suspend authorized projects during wet weather when soil resources will be detrimentally affected by rutting, compaction, and increased erosion.
- Minimize fire control lines, both handline and dozerline, to the width necessary to effectively stop fire spread. Rehabilitate lines by smoothing out berms and installing waterbars prior to the rainy season.
- Assess the need for soil stabilization following wildfires. Use the Emergency Stabilization and Rehabilitation process to determine and implement needed actions.
- Follow guidelines for site reclamation in the Oil and Gas BMP section to protect soils, including topsoil conservation, scarifying or disking soil, recontouring the area, redistributing topsoil and providing ground cover through seeding or other methods.
- Actively patrol public lands to prevent unauthorized off-road travel. If unauthorized routes are found, block access to minimize further soil disturbance and reduce the potential for erosion through rehabilitation action.

L.4.1 ADDITIONAL INFORMATION ON BMPS FOR SOILS

- Erosion and sediment control: http://www.cabmphandbooks.org
- OHV BMP Manual for erosion and sediment control: http://www.watchyourdirt.com/erosion-control-files/

L.5 WATER RESOURCES

To meet the requirements of the Clean Water Act, the BLM is currently preparing a "Water Quality Management Plan" under an MOU with the California Water Resource Control Board. BMPs for non-point source pollution will be developed and approved by the State during this process. When approved, the Bakersfield FO will follow those BMPs during project implementation. In the interim, the following measures are examples of BMPs that will be utilized to protect water quality:

- Employ erosion control measures during watershed restoration activities to reduce or eliminate sediment transport or incidental sediment discharge.
- Erosion control measures include mulching, placement of hay bales and other drainage control features, construction of rolling dips, and seasonal limits on operations.
- Protect sensitive areas (including streambanks, lakes, wetlands, estuaries, and riparian zones) by reducing direct loadings of animal wastes and sediment. This may include restricting or rotationally grazing livestock in sensitive areas by providing fencing, livestock stream

crossings, and by locating salt, shade, and alternative drinking sources away from sensitive areas.

- Upland erosion can be reduced by, among other methods: (1) maintaining the land consistent with the California Rangeland Water Quality Management Plan or Bureau of Land Management and Forest Service activity plans or (2) applying the range and pasture components of a Resource Management System (NRCS FOTG). This may include prescribed grazing, seeding, gully erosion control, such as grade stabilization structures and ponds, and other critical area treatment.
- Road construction/reconstruction shall be conducted so as to reduce sediment generation and delivery. This can be accomplished by, among other means, following designs for road systems, incorporating adequate drainage structures, properly installing stream crossings, avoiding road construction in SMAs, removing debris from streams, and stabilizing areas of disturbed soil such as road fills.
- Manage roads to prevent sedimentation, minimize erosion, maintain stability, and reduce the risk that drainage structures and stream crossings will fail or become less effective. Components of this measure include inspections and maintenance actions to prevent erosion of road surfaces and to ensure the effectiveness of stream-crossing structures. This measure also addresses appropriate methods for closing roads that are no longer in use.
- Confine runoff onsite to reduce impacts of mechanical site preparation and regeneration operations—particularly in areas that have steep slopes or highly erodible soils, or where the site is located in close proximity to a waterbody.
- Conduct prescribed fire practices for site preparation and methods to suppress wildfires in a manner that limits loss of soil organic matter and litter and that reduces the potential for runoff and erosion.
- Addresses the rapid revegetation of areas disturbed during road construction—particularly road systems where mineral soil is exposed or agitated (e.g., road cuts, fill slopes, landing surfaces, etc.).
- Do not apply chemicals within 100 feet of perennial streams or channels with beneficial use(s) recognized by the state.
- Do not apply chemicals directly into intermittent streams or channels with beneficial use(s) recognized by the state.
- Avoid aerial application of chemicals when wind speeds would cause drift.
- Avoid aerial application of wildland fire chemicals within 300 feet of waterways and any ground application of wildland fire chemicals into waterways.
- To minimize water quality degradation and maintain soil productivity while achieving rapid and safe suppression of wildfire, limit use of heavy equipment near streams and on steep slopes when possible. Where fire trail entry into a riparian area is essential, angle the approach rather than have it perpendicular to the stream.

L.5.1 MINERAL EXPLORATION AND DEVELOPMENT

Require that operators obtain all required state and federal permits for the protection of groundwater and surface water quality.

- For actions resulting in more than one acre of disturbance, discharges resulting from construction will be managed in accordance with the applicable Regional Water Quality Control Board NPDES permit requirements addressing stormwater discharges.

L.5.2 ADDITIONAL INFORMATION ON BMPS FOR WATER RESOURCES

- BLM Water Quality Law Summary: http://www.blm.gov/nstc/WaterLaws/Chap5.html
- Example BMPs from Eugene, OR BLM Field Office: http://www.blm.gov/or/plans/wopr/exrmp/eugene/appendices/appendixc.html#BMPs
- Proposed Grazing Management Practices for Water Quality in California, from Rangeland Health Standards and Guidelines for California and Northwestern Nevada Final EIS: http://www.blm.gov/style/medialib//blm/ca/pdf/pa/rangeland_management/final_rangeland_health.Par.537ebc11.File.pdf/APPENDIX_10.pdf
- Policy for Aerial Delivery of Wildland Fire Chemicals near Waterways: http://www.fs.fed.us/rm/fire/wfcs/Application_Policy-MultiAgency_042209-UPDATE.pdf.
- USDA Forest Service Water Quality Management BMPs: http://www.fs.fed.us/r5/publications/water_resources/waterquality/water-best-mgmt.pdf
- http://www.waterboards.ca.gov/water_issues/programs/stormwater/bmp_database.shtml
- http://www.waterboards.ca.gov/water_issues/programs/nps/cammpr.shtml
- http://www.cabmphandbooks.com/

L.6 CULTURAL RESOURCES

- The National Historic Preservation Act, Section 106 and 110, prior to the implementation of all proposed actions, cultural resource compliance would be coordinated pursuant to the current and any subsequent versions, supplemental procedures and amendments of the *National Programmatic Agreement Among the Bureau of Land Management, the Advisory Council on Historic Preservation, and the National Conference of State Historic Preservation Officers Regarding the Manner in Which the BLM Will Meet its Responsibilities Under the National Historic Preservation Act* and the *State Protocol Agreement Among the California State Director of the Bureau of Land Management and the California State Historic Preservation Officer and the Nevada Historic Preservation Officer Regarding the Manner in Which the Bureau of Land Management Will Meet its Responsibilities Under the National Historic Preservation Act and the National Programmatic Agreement Among the Bureau of Land Management, the Advisory Council on Historic Preservation, and the National Conference of State Historic Preservation*. Should the either of these agreements be terminated, the BLM would comply with requirements under Sections 106 and 110 of the National Historic

Preservation Act (NHPA) through the implementation of procedures put forth in 36 CFR 800.

- Archaeologists, law enforcement rangers, resource staff specialists, Native Americans, or designated volunteer stewards would patrol and monitor selected significant cultural resources on public lands in the Bakersfield FO to reduce threats from human and natural disturbances.
- The BLM would coordinate with Native Americans, cultural resource specialists, interdisciplinary specialists, conservationists, and interested public, as appropriate, to apply the best available science to determine the amount and type of maintenance desired at cultural sites that are threatened by human or natural causes and how best to mitigate identified problems.
- Continue support for native people to access traditional material collecting and gathering locations and ceremonial places. The Bakersfield FO holds resources used traditionally by the Native Americans, such as certain foods, medicinal resources, ceremonial items, and materials for making items such as baskets. The Bakersfield FO also contains sites that are of ceremonial or spiritual value to the native people. It is a federal policy to protect and preserve for the American Indian, the inherent right of freedom to believe, express, and exercise their traditional religions, including access to religious sites, use and possession of sacred objects, and freedom to worship through ceremonies and traditional rites (American Indian Religious Freedom Act of 1978). Executive Order 13007, Indian Sacred Sites (1996), directs federal agencies to manage federal lands in a manner that accommodates Indian religious practitioners' access to and ceremonial use of Indian sacred sites and that avoids adversely affecting the physical integrity of such sacred sites, to the extent practicable, permitted by law, and not clearly inconsistent with essential agency functions.
- Continue open dialogue and share information with Native Americans and ethnic groups that have cultural ties to lands managed by the Bakersfield FO.
- Conduct cultural resource inventory and evaluations for all projects that require soil disturbance or cause a visual intrusion on a historic property. The presence or absence of cultural properties would be determined prior to the approval of any surface-disturbing activity. When cultural properties are present, the project would be redesigned or modified to safely avoid impacting cultural sites or steps would be taken to adequately mitigate impacts through project redesign or data recovery.
- Soil erosion can severely impact surface and subsurface cultural resource integrity. Potential secondary impacts on cultural resources caused by erosion would be analyzed during project planning. Residual impacts on cultural resources outside the project area would be carefully considered in surface-disturbing projects.
- Identification, safe avoidance, or mitigation of potential adverse effect on cultural properties shall be required as a condition of a lease, permit, license, and other federal undertakings for both external and internal projects.

- Any late discovery of a cultural or paleontological resource during a project would be reported to the authorized officer. All activity in the immediate discovery area associated with the project would be suspended until an evaluation of the discovery is made by the archaeologist to determine appropriate actions to prevent the loss of significant cultural, paleontological, or scientific values. A written authorization to resume the project, or to take appropriate mitigation action, would be issued by the authorized officer.
- Sensitive cultural resource records, site location information, and traditional cultural properties and values would be held confidential from the public as deemed appropriate to protect historic properties (NHPA, Section 304 [a], Archaeological Resource Protection Act [ARPA], Section 9[a]).
- It is the policy of the BLM to 1) avoid impacts on significant cultural resources and traditional properties and values whenever possible; 2) to retain a representative example of the full array of cultural resource site types; and 3) to avoid inadvertent loss or destruction of cultural and paleontological resources by BLM actions or authorizations.
- Additional archaeological surveys would be required in the event a proposed project or its location were changed or modified after the initial survey is completed. This survey, associated documentation, and necessary compliance would be completed prior to project approval.
- Apply necessary measures to protect and preserve National Register-eligible historic and prehistoric resources by sustaining integrity, physical form, and materials associated with cultural resources. This could include installation of protective barriers, fences, or site capping; using regulatory and informational signs, kiosks, and brochures; limiting visitor access to sensitive sites; taking preventive measures to reduce erosion and other natural disturbances to sites, conducting data recovery to preserve a site's informational potential; providing visitor educational and awareness information by various means, such as interpretive exhibits, workshops, and tours; patrolling and monitoring the condition of historic properties; and identifying cultural resources through proactive field inventory, oral history, and archival records data compilation.
- Pursue identification and nomination of cultural properties to the NRHP.

L.7 OIL AND GAS STANDARD OPERATING PROCEDURES /IMPLEMENTATION GUIDELINES AND CONDITIONS OF APPROVAL

The following SOPs and implementation guidelines will be employed on all existing federal leases and private mineral developments, subject to the limits of BLM authority and the right of the owners/lessees to have reasonable access and development.

L.7.1 IMPLEMENTATION GUIDELINES

- All oil field activities that occur on land where the BLM has an interest, whether mineral or surface estate, should be conducted with the least impact practicable to sensitive resources.

- Wells that are not commercially developed should be reclaimed to natural contours and revegetated as soon as appropriate; i.e., restoration methods should consider timing of planting, acceptable species and evaluation criteria, and should be tailored to area-specific resource conditions and be compatible with the monument proclamation.
- Applications for permit to drill (APDs), sundry notices (leasehold activities requiring surface disturbance), and final abandonment notices will be reviewed using the existing NEPA approval process.
- Timely plugging and abandonment of depleted wells will be required. This includes plugging the well bore with cement, removing all materials and equipment, and recontouring/revegetation as specified in the conditions of approval.
- Design roads, well pads, and facilities for exploratory wells to impact and fragment the least acreage practicable. New facilities shall be designed to maintain natural drainage and runoff patterns, reduce visual impacts, and reduce hazards to wildlife, especially California condors. Noncommercial wells shall be restored as soon as appropriate using BLM restoration methods.
- Good housekeeping requirements will be enforced (i.e., operators will be required to maintain a neat and orderly appearance of sites, remove junk and trash, and otherwise minimize landscape intrusions).
- Sufficiently impervious secondary containment, such as containment dikes, containment walls, and drip pans, should be constructed and maintained around all qualifying petroleum facilities, including tank batteries and separation and treating areas consistent with the Environmental Protection Agency's Spill Prevention, Control, and Countermeasure regulation (40 CFR 112).
- Chemical containers should not be stored on bare ground or exposed to the sun and moisture. Labels must be readable. Chemical containers should be maintained in good condition and placed within secondary containment in case of a spill or high velocity puncture. The secondary containment must preclude entry from wildlife.
- Pipelines should be placed within existing disturbed rights-of-way, such as road shoulders, whenever possible.
- Roads shall be designed to an appropriate standard no higher than necessary to accommodate their intended functions.
- New wells and roads should be located in areas where cut and fill shall be minimized to the extent practicable.
- Operators will be encouraged or required to place multiple wells on a single pad where feasible in order to minimize unnecessary disturbance.
- Operators shall be required to maintain clean well locations and to remove trash, junk, and other materials not in current use.
- Other BMPs that may be applied to operations on BLM lands can be found on the Internet at http://www.blm.gov/bmp.

L.7.2 CONDITIONS OF APPROVAL

The following describes recognized engineering practices for the routine operation of oil and gas exploration and development activities, known as conditions of approval (COAs). These standard procedures are described in the Federal Onshore Orders and are further clarified in the Code of Federal Regulations (CFR 43, October 2007).

Standard regulations could be supplemented with additional COAs, which address sensitive issues within the Bakersfield FO. Critical issues underlying the federal regulations and supplemental COAs are the protections of usable aquifers, mineral zones, including hydrocarbons, surface environmental issues, site safety and well control, and site reclamation.

For more specific information on the requirements for obtaining permit approval and conducting environmentally responsible oil and gas operations on Federal lands and on private surface over Federal minerals, please see *The Surface Operating Standards and Guidelines for Oil and Gas Exploration and Development,* current edition (commonly referred to as The Gold Book). The Gold Book may be found online at:

http://www.blm.gov/style/medialib/blm/wo/MINERALS__REALTY__AND_RESOURCE_PROTECTION_/energy/oil_and_gas.Par.18714.File.dat/OILgas.pdf.

The BLM will inspect and monitor oil field activity in the following phases of oil and gas development:

- Geophysical/seismic;
- Drilling a new well;
- Interim Reclamation of a producing well;
- Regular Production and Environmental Surface inspections;
- Temporary abandonment of a producing well (idle well);
- Plugging and abandonment of a well;
- Surface reclamation.

No special COAs are normally added for routine producing well operations. The following describes the COAs applicable to each of the oil and gas development phases on existing federal oil and gas leases.

L.7.3 DRILLING A NEW WELL

After an APD has been received by the BKFO, a review of engineering design and potential effects on sensitive resources will be undertaken. During the review stage of an oil and gas project, either the operator or the BLM will note special conditions on the application. Modified proposals will be developed cooperatively with the applicant to ensure that the modified project still meets the applicant's objective. Any special conditions will be attached to the APD by the BLM, and the applicant will be informed within seven days of receipt of the APD if there are deficiencies that need

to be corrected. In addition to BLM-wide regulations, the BKFO has developed its own local procedures, as follows:

Pits. The BLM encourages the use of closed-loop or semi closed-loop mud systems whenever possible. If pits are utilized, they must remain free of any hydrocarbons. Hydrocarbons should be removed from pits upon discovery. If hydrocarbons enter the pit or are likely to enter the pit, the pit must preclude wildlife entry. Netting or other effective methods should be utilized to preclude wildlife entry. Flagging of pits is no longer considered an effective means to prevent wildlife entry to pits.

Steam Injectors. All steam injection wells within a 300-foot radius of a new location must be shut in a minimum of three days before the spudding (beginning drilling operations) of a new well.

Conductor Pipe. A minimum of 50 feet of conductor pipe is to be set and cemented to the surface. The conductor pipe must be equivalent to or exceed the properties of A-25-grade line pipe.

Diverter. Before spud, a diverter system will be installed on the conductor pipe and function tested. The test shall be recorded in the drilling log. The diverter system, at a minimum, shall consist of an annular type preventer (minimum working pressure 1,000 psi), 2-inch (minimum ID) kill lines, and 6-inch (minimum ID) diverter lines with no internal restrictions or turns. A full opening, hydraulically controlled valve shall be installed in the diverter line that will automatically open when the annular preventer is closed. The accumulator system should have sufficient capacity to close the annular preventer and open the hydraulically controlled valve.

Remote controls for the diverter system shall be located on the rig floor and readily accessible to the driller. Remote controls shall be capable of closing the annular preventer and opening the hydraulically controlled valve. Master controls shall be located at the accumulator and should be capable of closing and opening the annular preventer and opening the hydraulically controlled valve. The diverter system shall be function-tested daily and the test recorded in the drilling log.

General Casing and Cementing. A Subsequent Report (Form 3160-5) detailing the size, weight, and grade of the casing; the amount and type of cement, including additives; and a copy of the service company's materials ticket and job log shall be submitted to the BLM within five business days following the cementing of the casing string. Each casing string (except conductor pipe) shall be pressure tested, before drilling out the casing shoe, to 0.22 psi/ft of casing string length or 1,000 psi, whichever is greater, but not to exceed 70% of the internal yield pressure of the casing. The casing pressure test shall be recorded in the drilling log. The wait-on-cement time for each casing string shall be adequate to achieve a minimum of 500 psi compressive strength at the casing shoe before drilling out.

Drilling Fluids. Sufficient quantities of drilling fluid (mud and water) shall be maintained at the well site, at all times, for the purpose of controlling steam kicks.

L.7.4 TEMPORARY ABANDONMENT OF A PRODUCING WELL (IDLE WELL)

Oil and gas exploration and development is a cyclical business, with periods of high and low levels of activities. On occasion, an operator may decide to temporarily shut in producing wells and wait for conditions to improve. The highly viscous nature of most Kern County crude oil, typical low well head pressures, and the relatively low corrosive properties of the fluids (low sulphur crude) make the known dangers of shutting in a well for long periods and then bringing it back online less of a mechanical problem in the BKFO than in other producing regions of the country. Monitoring and correcting the problem has been successfully undertaken by the California Division of Oil, Gas, and Geothermal Resources and the BKFO.

The following additional conditions *may* be required before the temporary abandonment of a producing oil/gas well, service well, or an injection well.

Zone Isolation. The requirement to isolate the producing interval (General Requirement #4) is waived. This waiver is based on the information submitted with the application and the geologic data in *Volume II - California Oil and Gas Fields*, (field name) which indicates the absence of usable water aquifers above the producing horizon in (section in which well is located).

Mechanical Integrity of Casing. The mechanical integrity of the casing may be determined using the ADA pressure test method.

Fluid Surveys. In accordance with the requirements of the State of California Idle Well Program, a fluid level survey will be performed at two- to five-year intervals while the well is temporarily abandoned. A copy of the survey will be submitted to the BLM within five business days of the survey.

Monitoring of Wellhead Pressures and Temperatures. Wellhead pressure and temperature will be continuously monitored while the well is temporarily abandoned. Any pressure/temperature change will be promptly reported to the BLM.

Isolation of the Producing Interval. The producing interval shall be isolated by setting a plug in the casing within 100 feet above the producing interval if a rising fluid level, an increasing wellhead pressure, or an increasing wellhead temperature is detected. The plug could be either a retrievable or drillable-type bridge plug or a cement plug of at least 100 feet in length.

L.7.5 PRODUCING, PLUGGING AND ABANDONMENT OF A WELL

No additional conditions are typically attached to the abandonment of a well in California. Onshore orders describe the plugging procedure. Final abandonment would normally be witnessed by the BLM. No final surface site marker is required by the BKFO, but a permanent buried marker is required.

Surface Reclamation (Interim or Final)

Conditions for the recovery of an oil well site are unique to each area's ecosystem and habitat. The following examples of COAs have been developed for use within the BKFO. The applicability of any or all of these COAs will be determined based on site-specific conditions.

General. The operator (or holder) shall prepare a seedbed by scarifying the disturbed area, distributing topsoil uniformly, and possibly disking the topsoil, as directed by the BLM authorized officer.

The operator shall recontour the disturbed area and obliterate all earthworks by removing embankments, backfilling excavations, and grading to reestablish the approximate original contours of the land in the area of operation.

The operator shall uniformly spread all topsoil over all unoccupied disturbed area. Spreading should not be done when the ground or topsoil is frozen or wet.

The operator shall seed all disturbed area, using an agreed on method suitable for the location using locally collected seed. Seeding shall be repeated if a satisfactory stand is not obtained, as determined by the BLM authorized officer upon evaluation after the first growing season.

The operator shall arrange to have a biologist available to assist the construction workers in the identification and avoidance of endangered species.

Producing Wells. Site interim reclamation for producing wells shall be accomplished for portions of the site not required for continued operation of the well. The following measures are typical reclamation requirements:

- Production facilities and equipment is placed to maximize interim reclamation;
- Closing drilling fluid pit (mud pit) if present;
- Recontouring the pad, leaving only enough level ground for possible future workover operations;
- Cut and fill slope vegetation;
- Interim reclamation of access roads;
- Site fencing;
- Berm removal and site grading;
- Polluting substances, contaminated materials disposed of properly.

The Surface Operating Standards and Guidelines for Oil and Gas Exploration and Development "The Gold Book" (Current Edition) should be referenced for more detailed information.

Nonproducing Wells. Rehabilitation on the entire site shall be required and should begin as soon as practical, depending on prevailing weather conditions. Cut and fill slopes shall be reduced and graded to blend to the adjacent terrain.

Drilling fluids held within pits may be allowed to dry for up to six months. Fluids that will not dry must be removed. All polluting substances or contaminated materials, such as oil, oil-saturated soils, and gravels, shall be removed to an approved site.

Drainages shall be reestablished and temporary measures will be required to prevent site erosion until vegetation is established.

After final grading and before replacement of topsoil, the entire surface of the site shall be scarified to eliminate slippage surfaces and to promote root penetration. Topsoil should then be spread over the site to achieve an approximate, uniform stable thickness consistent with the established contours.

Permanent Well Abandonment. The surface management agency is responsible for establishing and approving methods for surface rehabilitation and determining when this rehabilitation has been satisfactorily accomplished. At this point, a subsequent (final) report of abandonment will be approved.

Hydraulic fracturing. Hydraulic fracturing is a common and important process to stimulate oil and gas well production and has been used more than 1 million times for many years all over the world. Fracturing fluid is pumped under high pressure down the wellbore and into the reservoir rock to create fractures (i.e., cracks) in order to increase the immediate production rate and ultimate total recovery of oil and natural gas over the economic life of the well. In a typical fracturing job, approximately 99.5% of what is injected is water and sand.

In FY 2010, only about 5 percent of the federal wells drilled in California (approx. 15 out of 300+) have employed hydraulic fracturing. None of these used diesel as the frac fluid, a source of concern to the public. In addition, none of these were in areas where there were fresh water aquifers, another concern.

According to industry sources, it is likely that more California wells in the future will utilize hydraulic fracturing because of recent interest in deep shale prospects. Current Federal regulations require no special reviews or approvals for routine fracturing, assuming prudent operating practices are employed and no new surface disturbance occurs. For non-routine fracturing, the operator needs prior approval.

A number of studies have been initiated, and BLM will implement any new regulations that may be developed as a result of these studies. BLM is committed to ensuring the highest standards of human and natural resource/environmental safety.

L.7.6 GEOPHYSICAL EXPLORATION

A large number of the threatened and endangered and sensitive species protection measures have been developed as a result of formal consultations between the BLM and USFWS for geophysical exploration. Many measures have also been required by CDFG for projects complying with CESA, CEQA, and the Fully Protected Species Act. Once protection measures are identified in federal biological opinions or in CDFG permits, they generally become SOPs to obtain subsequent USFWS and CDFG permits. As additional measures are developed to minimize the adverse effects from

geophysical exploration, they are likely to become required actions in order to comply with ESA and CESA and thus would become additional SOPs.

Project Reconnaissance

A general reconnaissance of the project area will be conducted to describe the project area and to determine the extent of listed species presence and habitat. This information will used to identify areas where listed species are likely to occur, land uses that preclude listed species use, topography that may preclude listed species use, habitat types that support listed species, and the extent of small mammal burrowing activity along source lines, receiver lines, travel routes, and staging areas. Reconnaissance surveys will be supplemented by conducting general field visits of the project area, obtaining aerial images of the project area, land ownership, slope and topographic features, general habitat or vegetation mapping, and land use maps using GIS, California Natural Diversity Data Base, and other information for the project area.

Avoidance Criteria

Source Points: Vibroseis, Shot Hole, and Staging Areas

Vibroseis and shothole drilling and vehicle staging avoidance criteria for off-road locations (minimum exclusion zone radius):

Avoidance Buffers

- 200 feet from occupied San Joaquin kit fox natal or pupping dens;
- 150 feet from known San Joaquin kit fox natal or pupping dens;
- 100 feet from occupied San Joaquin kit fox dens;
- 100 feet from known San Joaquin kit fox dens;
- 50 feet from potential San Joaquin kit fox dens;
- 50 feet from giant kangaroo rat burrow systems;
- 30 feet from potential or known San Joaquin antelope squirrel burrows;
- 30 feet from potential or known blunt-nosed leopard lizard burrows;
- 50 feet from badger dens;
- 50 feet from burrowing owl burrows;
- 50 feet from populations of listed plants; and
- Natural vernal pools and natural ponded waters will be avoided by 300 feet (Table 1 – above).

Travel Routes

- Travel routes shall be placed so that there are no sensitive wildlife resources within a 25-foot corridor (12.5 feet from centerline) along access routes and source lines.

Receiver Lines

- Receiver lines will be walked if necessary to avoid direct impacts on burrows and features.
- Where receiver lines are driven by ATVs/UTVs, avoidance buffers will be enforced.

Geodetic Surveys

Geodetic surveys of the source and receiver points in listed species habitat shall be completed in a manner to avoid impacts on listed species.

- Surveys may be conducted without biological monitors where all cross-country activities in listed species habitat will be conducted on foot, with ATVs/UTVs confined to existing roads and two-track trails.
- Where ATVs/UTVs are used traveling cross-country in conserved areas and BNLL habitats, biological surveys to identify travel routes and avoidance zones shall be completed before, or concurrent with, conducting the geodetic surveys.
- ATVs/UTVs may be used outside of conserved areas or BNLL habitat without biological surveys where speeds are not in excess of 10 miles per hour in cross-country travel. All habitat features (e.g., burrows, dens, listed plant populations) shall be avoided. If this is not possible, biological monitors shall accompany survey crews using ATVs/UTVs.
- If ATVs/UTVs are observed to collapse burrows suitable for BNLL use, to compact or disturb soil, uprooting plants, or extensive mortality to native shrub species, activities shall be conducted on foot or travel routes shall be identified ahead of survey crews.

Source Point Activities

Geophysical surveys of the source points and all associated travel in listed species habitats shall be completed in a manner to avoid impacts on listed species.

- Before commencement of seismic testing activities, an agency-approved biologist shall conduct preactivity surveys of proposed vibrator, shot hole, source point travel paths, and staging areas in listed species habitats.
- Where seismic lines cross threatened or endangered species habitat, the survey corridor within which testing and ancillary vehicles operate shall be limited to a maximum width of 25 feet (12.5 feet on either side of the centerline). These activity zones shall be reduced, where possible, to avoid endangered species sites such as occupied kit fox dens or kangaroo rat burrows.
- All cross country vehicle travel will remain on the flagged routes and will avoid marked burrows.
- Small shot hole drilling vehicles, such as tractor-mounted drill rigs or ATV/UTV-pulled drill trailers is the suggested source method to be used on conserved lands (CDFG, some BLM, CNLM, other lands with threatened and endangered conservation easements, HCP conservation management areas, etc.) and in likely blunt-nosed leopard lizard habitats.

- San Joaquin kit fox dens, giant kangaroo rat, San Joaquin antelope squirrel, and blunt-nosed leopard lizard burrows shall be flagged for avoidance. As necessary to protect these species, additional habitat features, shall be identified and flagged for avoidance.
- Project effects will be monitored for species impacts as work progresses at source points, along travel routes and at staging areas.
- Efforts will be made to have biological monitors work with equipment to avoid burrows, dens and features where biological surveys were conducted before seismic survey activities.
- If biological surveys are conducted within 14 days of source point activities, survey routes do not need to be resurveyed ahead of source point vehicle travel.
- If biological surveys were conducted greater than 14 days before source point activities, biological monitors will be required to actively monitor and resurvey as necessary, travel routes and point locations to ensure that avoidance buffers are applied to any new listed species occurrences.
- Preactivity surveys will be conducted immediately ahead of seismic vehicle and drill rig deployment where previous surveys were not completed, providing that all avoidance buffers will be met.
- All project vehicles shall observe travel avoidance routes described in the biological preactivity survey notes that provide for avoidance of sensitive wildlife and special status plant resources.
- If avoidance distances cannot be met, a qualified biologist shall flag a rerouted travel corridor that avoids direct damage to burrows, dens, shrubs, or other habitat features.
- Source points may be skipped or moved to meet avoidance buffer criteria.
- The applicant shall make every reasonable effort to prevent collapse of dens and burrows by relocating source points to avoid dens and burrows or other means such as establishing exclusion zones as described above.
- Damage to shrubs will be minimized to the maximum extent practicable.
- Project related vehicles should be confined to existing primary or secondary roads or to specifically delineated project areas that have had biological surveys to avoid listed species.
- Vibroseis vehicles may be used on existing roads within avoidance buffer distances provided that biological monitors shall accompany vibroseis crews to avoid direct impacts on listed species in roads where disturbance will occur.

Receiver Line Activities

Geophysical surveys of the receiver points and all associated travel in listed species habitats shall be completed in a manner to avoid impacts on listed species.

- Before deployment of receiver lines, geophones, and related equipment, a qualified biologist shall conduct preactivity surveys of proposed geophone travel paths and receiver points. This may be done after the geodetic survey, but before the receiver line deployment.

- All avoidable San Joaquin kit fox dens, giant kangaroo rat, San Joaquin antelope squirrel, blunt-nosed leopard lizard burrows, and listed plant populations within the immediate vicinity of receiver lines, and points shall be prominently staked or flagged to alert project personnel to their presence.
- All project-related flagging shall be collected and removed after completion of the project.
- Damage to shrubs will be minimized to the maximum extent practicable.
- Vehicles in cross-country travel will remain on flagged routes and will avoid marked burrows. A biologist will assist project-related receiver line cross-country travel, geophone placement, and staging areas to avoid listed species and their habitat features.

Habitat Mitigation Measures

Geophysical surveys of the source and receiver points and all associated travel in listed species habitats shall be completed in a manner to minimize impacts on listed species habitats.

- During geophone deployment, work crews shall make every reasonable effort to avoid damaging shrubs, washes, drainage banks, and cryptogamic crusts.
- Small shothole drilling vehicles, such as tractor-mounted drill rigs or ATV/UTV-pulled drill trailers, is the suggested method to be used in listed species habitats.
- Off-road travel corridors shall be clearly delineated to contain project-related vehicles within marked travel routes to reduce impacts on large shrubs and washes.
- Damage to shrubs will be minimized to the maximum extent practicable.
- Project-related vehicles shall be restricted to approved travel routes and paths/roads.
- Large shrubs shall be avoided by carefully selecting travel paths/roads to avoid crushing shrubs.
- Washes shall be avoided by all vehicular activity to the maximum extent practicable. Washes will be crossed to minimize project impacts. Washes shall not be used as travel routes.

Additional Species-Specific Mitigation Measures

Blunt-Nosed Leopard Lizard

When the project area is within the known range of' blunt-nosed leopard lizards, the following measures will be implemented:

- Shrubs will be avoided to the maximum extent practicable.
- All potential burrows that may be used by blunt-nosed leopard lizards will be avoided.
- Project activities will be conducted during daylight when lizard activity is likely, but no daytime temperature criteria are required.
- Small shothole drilling vehicles, such as tractor-mounted drill rigs or ATV/UTV/UTV-pulled drill trailers, is the suggested source method to be used in likely blunt-nosed leopard lizard habitats.
- ATVs/UTVs may be used where avoidance criteria can be met.

- Vibroseis vehicles may be used on existing roads within buffer distances provided that biological monitors shall accompany vibroseis crews to avoid direct impacts on blunt-nosed leopard lizards.
- Biological monitors will look for active leopard lizards aboveground within and directly adjacent to the seismic cross-country travel corridors.
- Vehicles parked in blunt-nosed leopard habitat for greater than one hour shall be inspected under and around the vehicle for BNLL. Vehicles will not be moved until any BNLL observed have moved a safe distance to avoid being crushed.
- All potential burrows of this species will be flagged for avoidance within avoidance buffer zones.
- Potential habitat will be considered suitable for blunt-nosed leopard lizards within the range of the species by the following criteria:
    - Slope is less than 30%, most favorable less than 10%,
    - Vegetation density is open to allow blunt-nosed lizard movements, and
    - Burrows are available and suitable for BNLL use.

San Joaquin kit fox

If damage or destruction to a known or occupied San Joaquin kit fox den cannot be avoided during project activities, the BLM and USFWS shall be contacted immediately for guidance.

Listed Plant Species

- Vibroseis units and drill buggies/tractors/ATV/UTV/UTV-trailers will follow flagged routes around areas of listed plants on BLM and conserved lands. A 50-foot avoidance zone for special-status plant species will be enforced.
- Avoid populations of Hoover's woolly-star to the maximum extent practicable in the growing season. Populations of special-status plants will be avoided by relocating and/or reconfiguring source points, receiver points and travel routes. If it becomes necessary to locate a project in an area where Hoover's woolly-star is known or thought to be present, every reasonable effort shall be made to wait until after seed set before beginning ground disturbances. It will not be necessary to protect Hoover's woolly-star that has become reestablished in previously disturbed areas.
- When possible, conduct seismic surveys after seed set of listed plant species (generally after May 1).
- Avoid special-status plant species by relocating source points, travel routes, and receiver points to avoid listed plant populations by 50 feet.

Other Mitigation Measures

- Before the onset of ground disturbing project activities, a qualified wildlife biologist shall provide an employee orientation program to project personnel on the occurrence and distribution of listed species in the project area, measures being implemented to protect

these species during project actions, reporting requirements should incidental take occur, and applicable definitions and prohibitions under the Endangered Species Act.

- Qualified biologists shall accompany seismic survey vehicles and crews throughout the project area in areas with the potential to affect listed species.
- At least one qualified biologist shall accompany each vibrator set or drill rig crew working within endangered species habitat.
- Qualified biologists will be responsible to implement survey, take avoidance, monitoring, and reporting activities and shall perform the following:
    - Aid seismic crews in satisfying avoidance criteria and implementing project mitigation.
    - Aid seismic crews in relocating source points and receiver lines as necessary.
    - Observe and note all pertinent information concerning project effects on listed species.
    - Avoid the take of blunt-nosed leopard lizards; and associated burrows
    - Assist the seismic contractor in conducting the proposed project in such a manner as to avoid adverse effects on endangered and threatened species.
- Biological monitors are expressly empowered to order cessation of seismic activities if take avoidance and mitigation measures are significantly violated.
- Biological monitors or project environmental representative shall notify the BLM and USFWS before, or as soon as possible after biological compliance measures are significantly violated.
- At least one biological monitor shall accompany vibroseis and shot hole crews while working within endangered species habitat.
- Project biologists shall keep an accurate running tally of the number of dens and burrows damaged, destroyed, or otherwise affected by project activities. Such tallies shall be combined and totaled at the end of each workday to determine proximity to take limits and the need for subsequent project modifications to prevent impacts upon dens and burrows in excess of take limits. Total number of dens and burrows affected by the project shall be reported in the post-activity compliance report.
- One biologist exclusive of biologists observing vibrator crew activities shall oversee activities of receiver line deployment crews where cross country vehicle travel occurs in listed species habitat.
- Pets shall not be permitted on the project site during project activities.
- All food-related trash such as wrappers, cans, bottles, and food scraps shall be disposed of in closed containers only and regularly removed from the project site.
- Although highly unlikely to occur, all spills of hazardous materials within endangered species habitats shall be cleaned up immediately according to applicable federal, state, and local laws and regulations.
- Daily preparation and end of day maintenance will be conducted no earlier than two hours before sunrise and not later than two hours after sunset. These activities include refueling of

vibroseis and other project related vehicles, moving some vehicles to staging areas, etc. These activities, however, will not include significant vehicle travel in listed species habitat. No off-road vehicle travel shall be conducted within sensitive species habitat until there is sufficient natural light for resource avoidance.

- All project-related vehicles shall observe a speed limit of 10 mph or less on all routes that traverse endangered species habitat, except on State and County highways and roads.
- To prevent the inadvertent entrapment of covered vertebrates, all project-related open steep-walled holes, or trenches more than 2 feet deep shall be covered at the close of each working day by plywood or similar materials, or provided with one or more escape ramps constructed of earth fill or wooden planks. Before such holes or trenches are filled, they should be thoroughly inspected for trapped animals. If at any time a trapped or injured kit fox is discovered, procedures listed above must be followed.
- If during any phase of the seismic operation any oil or other pollutant shall be discharged from project related vehicles, or from containers impacting federal lands, the control, cleanup, and disposal of such oil or other pollutant, wherever found, shall be the responsibility of the permit holder, regardless of fault. Upon failure of permit holder to control, cleanup or dispose of such discharge on or affecting federal lands, or to repair all damages to federal lands resulting from, the authorized officer may take such measures as he/she deems necessary to control and cleanup the discharge and restore the area, including, where appropriate, the aquatic environment and fish and wildlife habitats, at the full expense of the permit holder. Such action by the authorized officer shall not relieve the permit holder of any liability or responsibility.

Vegetation and Habitat Types

Project related vehicles should be restricted to approved travel routes and paths/roads. Large shrubs shall be avoided in an effort to minimize impact on wildlife habitat. Large shrubs shall be avoided by carefully selecting travel paths/roads to avoid crushing individuals. In addition, washes represent a fragile habitat type and function as seasonally productive sources of annual vegetation for animals, as dispersal corridors, and as areas affording favorable burrow construction habitat. Washes shall be avoided by all vehicular activity as feasible.

Post-Project Reporting

Within 45 calendar days after completion of the project, the seismic contractor shall submit to the USFWS and BLM a post-activity compliance report that details the following information:

- Dates that seismic testing occurred:
- Pertinent data concerning the seismic contractor's success in meeting project mitigation measures.
- Known project effects on San Joaquin kit foxes, blunt-nosed leopard lizards, giant kangaroo rats and San Joaquin antelope squirrels, if any (including specific number of dens and small mammal burrows damaged or destroyed).

- Occurrences of incidental take of state or federally listed species.
- An assessment of the extent and severity of project impacts on all sensitive wildlife habitats, a summary of rehabilitation plans, if any; and other pertinent information.

BLM, USFWS and CDFG shall be notified in writing within three (3) working days in the event of an accident death or injury of a San Joaquin kit fox, giant kangaroo rat, or blunt-nosed leopard lizard, or of the finding of any dead or injured kit fox, giant kangaroo rat, or leopard lizard during the proposed seismic survey. Notification shall include the date, time, and location of the incident or of the finding of a dead or injured animal, and any other pertinent information. The USFWS contact for this information is the Chief of the Division of Endangered Species, Sacramento Field Office, 3310 El Camino Avenue, Suite 130, Sacramento, CA 95821-6340, (916) 979-2725. The CDFG contact information is the California Department of Fish and Game, Fresno Regional Headquarters, Environmental USFWSs Division, 1234 E. Shaw Ave., Fresno, CA (559) 243-4014. Any dead or injured kit fox, giant kangaroo rat, or blunt-nosed leopard lizard shall be turned over to the California Department of Fish and Game.

L.8 VISUAL RESOURCES

Visual Resource BMPs provide a variety of tools to address the visual impacts of projects on the landscape. They are applied to reduce or eliminate visual contrast in order to maintain or achieve Visual Resource Management (VRM) objectives. BMPs for visual resources include a variety of techniques from proper site selection for projects, to minimizing long-term surface disturbance and correct color selection for painting structures. No all techniques are appropriate for all locations and would be implemented as appropriate. As with all BMPs the science and technology; specifically camouflaging techniques, behind the management is continually evolving as such new BMPs are developed and replace other concepts. More information on BMPs for visual resource management can be found in several BLM publications and websites including the 2007 Visual Resource Management for Fluid Minerals self study guide found at http://www.blm.gov/wo/st/en/prog/energy/oil_and_gas/best_management_practices/technical_information.html.